Wisconsin Groundwater-Level Monitoring Network

Wisconsin's statewide groundwater-level monitoring network has been operated jointly by the Wisconsin Geological and Natural History Survey (WGNHS) and the U.S. Geological Survey (USGS) since 1946, working in close cooperation with the Wisconsin Department of Natural Resources (WDNR). As of June of 2016, this network consists of 93 long-term monitoring wells, two spring gaging stations and 57 project-specific, limited-term monitoring wells. The 93 permanent wells and 2 spring gaging stations are located in 45 of Wisconsin's 72 counties. This network provides a consistent, long-term record of fluctuations in water levels in shallow and deep aquifers. In addition, project-specific wells are managed as well as supported with funding from various groundwater studies across the state. While these project-specific wells are only operational over the lifetime of an active groundwater study, they provide substantial cost savings for the network.

Water levels collected from the network help scientists and managers evaluate effects of well pumping, the response of groundwater levels to drought or increased precipitation, and effects of land-use change on groundwater resources. These data are also routinely used in the development of regional groundwater flow models, as long-term water-level measurements serve as reliable calibration targets.

On a day-to-day basis the USGS and WGNHS continue to support the evaluation and maintenance of the monitoring network, aids in data collection, interpretation, and provides information to public and private clients through dedicated webpages. The WGNHS provides a general overview of the monitoring network (*http://wgnhs.uwex.edu/water-environment/groundwater-monitoring-network*), while the USGS maintains an interactive portal for viewing and downloading data (*http://wi.water.usgs.gov/data/groundwater.html*).

The WGNHS and USGS, at the request of the DNR, have recently completed a proposal to add new wells, lake, and stream gages to the monitoring network in four areas where high capacity well applications are prevalent and water level data are sparse. These areas include: the Antigo Flats in Langlade Co.; several sites near the groundwater divide on the eastern edge of the Central Sands (Adams, Marquette, Portage and Waushara, Cos.); and in the Southern Rock River Valley in Rock Co. And lastly, in an area in West Central Wisconsin (Dunn and St. Croix Cos.) where we hope to partner with the US Fish and Wildlife Service and potentially use existing wells present on federal or state lands when those properties were acquired.

Over the past year, the USGS and WGNHS have partnered with Chippewa, Dunn, and Eau Claire counties to begin a pilot deployment of Wellntel (*www.wellntel.com*) water-level monitoring equipment. Wellntel is a private-sector company that has developed an inexpensive, remotely operated, groundwater-level monitoring system that can be readily installed in wells to obtain real-time groundwater-level data. This pilot study seeks to evaluate the suitability of Wellntel systems for collecting water-level data in a variety of groundwater settings and compare the results to existing monitoring techniques. Provided the Wellntel systems meet testing requirements, the hope is that they could be rapidly deployed to collect groundwater-level data in key areas across the state.

The WGNHS is also pleased to report that a recent grant application to the USGS National Ground-Water Monitoring Network (NGWMN) program has been approved for funding. The grant amount is for nearly $90,000 and will allow for several repairs to the long-term monitoring network, including the redevelopment of existing wells and the drilling of replacement wells.